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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/629,232

07/28/2003

Hsieh Kun Lee

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EXAMINER

WRIGHT, INGRID D

ART UNIT

PAPER NUMBER

2835

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

12/28/2006

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/629,232

Applicant(s)

LEE ET AL.

Examiner

Ingrid Wright

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 and 11-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 11-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/28/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Objections***

1. Claim 11 is objected to, as claims 7-11 are cancelled from the claims and claim 11 is also included in the Amendment dated, 10/18/06. There seems to be a typo. If this is (or not) correct, please inform the Office regarding the status of claim 11, as claim 11 is still present in the claims of the instant application. Thus, claim 11 is considered in the following action.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 11-15 & 17-21 are rejected under 35 U.S.C. 103(a) as obvious over Eyman et al. US 6639800 B1 in view of Isenburg US 6741470 B2.

Re claims 1 & 12 respectfully, Eyman et al. teaches a heat sink assembly (Abstract of Eyman et al.) comprising a printed circuit board (204) having an electronic package (200), a retention module (30) surrounding the electronic package (200), the retention module (30) being integrally formed and defining two positioning holes (area near 31A,31B) symmetrically opposite sides of a center thereof, the retention module (30) defining an opening in a middle thereof, a heat sink (20) having a base (bottom horizontal surface of heat sink (20)) and an array of fins (24) extending upwardly from the base, parallel rows of fins (24) defining a plurality of parallel channels therebetween, and a clip (10) cooperating with the retention module (30) to press the heat sink (20) against the electronic package (200), the clip (10) comprising a pressing portion (14) received with a pressing beam received in a corresponding channel and resting on

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additional fins (22), which are located on a base of the heat sink (20), but is silent as to specifically pins, the pressing portion (14) resting on the base of the heat sink (20) and pin fins. Isenberg teaches pins (105) positioned in positioning holes (115) and welded (col. 8, lines 1-5) to a printed circuit board (102) and pin fins (124). Therefore, to modify Eyman et al., by employing pins and pin fins, would have been obvious to one having ordinary skill in the art, since Isenberg teaches a mounting assembly having these design characteristics. The skilled artisan would be motivated to utilize the pins (105) of Isenberg over the screws (90) of Eyman et al. and the pin fins (124) of Isenberg over the fins (24) of Eyman et al., in order to provide an alternate means of securing or locking the module (30) to the printed circuit board (204), by providing an enhanced and stronger means of securing a heat sink assembly/retention board assembly, to prevent the securing means from sliding out (or loosening) of a circuit board, eliminate the need of fasteners, such as screws (col. 6, lines 54-64 of Isenberg) and to further provide an alternate heat dissipation configuration and Isenberg is only used to provide the added limitation of pins and pin fins.

Eyman et al. teaches a pressing portion (14) resting on additional fins (22), except resting on a base heat sink (20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the pressing portion (14) to rest on the base of the heat sink (20), as Eyman et al. teaches the heat sink could equally include (or not include) the additional fins (22) (col. 4, lines 49-51 of Eyman et al.).

Re claim 2, Eyman et al. as modified by Isenberg, teaches wherein the printed circuit board (204) defines a pair of locating holes (208) corresponding to the positioning holes (holes near 31A,31B) of the retention module (30) and pins (105) being welded into the locating holes.

Re claim 3, Eyman et al. as modified by Isenburg, teaches pins (105) having a blocking portion (306), a connecting portion (302a) and a welding portion (302b), each of said portions sequentially having reduced diameters, the blocking portions abut against a retention module, the connecting portions (302a) are lodged the positioning holes and the welded portions (302b) are welded into the locating holes of the printed circuit board (col. 8, lines 3-5 of Isenburg).

Re claim 4, in regards to all the limitations of claim 1 above, Eyman et al. as modified by Isenburg, teaches wherein a pressing portion of the clip (10) comprises a pressing beam (14) received in a corresponding channel and resting on additional fins (22) located on base of the heat sink (20) and a pair of clamping portions (12A,12B) engaging with a bottom face of the retention module (30), but is silent as to an additional pressing beam. Therefore, to modify Eyman et al. as modified by Isenburg, by employing an additional pressing beam, would have been obvious to one having ordinary skill in the art, since it is well within the level of skill to duplicate or add an additional beam to the clip (10), in order to provide a stronger locking means for the heat sink and retention module assembly of Eyman al. as modified by Isenburg.

Re claim 5, Eyman et al. as modified by Isenburg, teaches a plurality of standoff portions (34) extending from retention module (30) for isolating the module (30) from the printed circuit board (204).

Re claim 6, Eyman et al. as modified by Isenburg, teaches the clip (10), and wherein the clamping portions (12A,12B) extend from respective opposite sides of the pressing portion (14) toward the printed circuit board (204), and the clamping portions (12A,12B) form distal hooks engagingly clasping the retention module (30), but is silent as to the clip (10) being made of plastic. Therefore, to modify the clip (10) of Eyman et al. as modified by Isenburg, by manufacturing it in a plastic material, would have been

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obvious to one of ordinary skill in the art at the time the invention was made, since plastic is a known manufacturing material, readily available and taught by Eyman et al.

Re claim 11, Eyman et al. teaches two positioning holes (holes near 31A,31B) defined on opposite sides the retention module ((30), but is silent as to positioning holes defined in diagonally opposite corners. Isenburg teaches two positioning holes (115) defined in diagonally opposite corners of a retention module (108). Therefore, to modify Eyman et al. by employing positioning holes in diagonally opposite corners of the retention module (30), would have been obvious to one having ordinary skill in the art at the time the invention was made, since Isenburg teaches a retention module having these design characteristics. The skilled artisan would be motivated to combine Isenburg with Eyman et al., in order to provide an alternate securing configuration for the fasteners of the heat sink assembly (20) of Eyman et al., as Eyman et al. equally teaches fasteners secured in positioning holes at opposite sides of heat sink (20).

Re claim 13, in regards to all the limitations of claim 12 above, Eyman et al as modified by Isenburg, teaches symmetrically opposite sides of a center of the retention module (30) and pins (105).

Re claim 14, in regards to all the limitations of claim 12 above, Eyman et al. as modified by Isenburg, teaches a retention module (30) and a printed circuit board (204) and pins (105) welded to a portion of the retention module facing the printed circuit board.

Re claim 15, in regards to all the limitations of claim 12 above, Eyman et al. as modified by Isenburg, teaches a pair of positioning holes (holes near (31A,31B)) defined in the retention module (30) and first ends of the pins (24) being interentially received in the positioning holes, and opposite second ends of the pins (105) being welded to the printed circuit board (col. 8. lines 3-5 of Isenburg).

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Re claim 17, in regards to all the limitations of claims 1-3 above, Eyman et al. as modified by Isenburg teaches wherein the blocking portion (306) of each of the pins (105) abut against the retention module above a corresponding positioning hole of the retention module.

Re claim 18, in regards to all the limitations of claim 1,4 & 5 above, Eyman et al. as modified by Isenburg teaches wherein the retention module (30) extends a plurality of fixing arms (arm near 31A,31B) outwardly and pins (105).

Re claim 19, Eyman et al. as modified by Isenburg, teaches the standoffs (34), fixing arms (arm near 31A,31B) of the retention module (30).

Re claim 20, in regards to all the limitations of claim 12 above, Eyman et al. as modified Isenburg, teaches pins (105) extending through two corresponding positioning holes (holes near 31A,31B) defined in a retention module (30), each of the pins (105) comprising a blocking portion (306) abutting against the retention module above the corresponding positioning hole (holes near 31A,31B), a connecting portion (302a) received in the corresponding hole, and a welding portion (302b) welded (col. 8, lines 1-5 of Isenburg) to the printed circuit board.

Re claim 21, Eyman et al. as modified by Isenburg, teaches wherein the retention module (30) extends a plurality of standoffs (34) from a bottom thereof, each of the standoffs being located between two corresponding adjacent corners of the retention module (30).

3. Claim 16 is rejected under 35 U.S.C. 103(a) as obvious over Eyman et al. US 6639800 B1 in view of Isenburg US 6741470 B2, further in view of Lai US 6381813 B1.

Re claim 16, Eyman et al. teaches a heat sink assembly (Abstract of Eyman et al.) comprising a printed circuit board (204) with an electronic package (200) located thereon and a plurality of through holes (208) therein, a retention module (30) surrounding the electronic package (200) with two projections near (31A,31B) extending outwardly near corners thereof, respectively, the retention module (30) defining an opening therein, screws (90) respectively extending through said two projections of the retention module (30) and fastened to the corresponding through holes (208) whereby the retention module (30) is fixed to the printed circuit board (204), a heat sink (20) defining a plurality of slots, the heat sink (20) having a base (bottom horizontal surface) received in the opening of the retention module (30), a plurality of fins (24) extending upwardly from the base, the slots being defined between the fins (24), a clip (10) defining a rectangular shape like configuration with a pressing bar (14) extending through a slot in a in a parallel relationship and resting on fins located on a base and two pairs of locking devices (12A,12B) located at two sides of the clip (30), which are perpendicular to the pressing bar (14), and respectively latchably engaged with two sides of the retention module (30), each of which is vertically aligned with the corresponding side of the clip (10) and between a corresponding pair of said 2 projections, but is silent as to four pins respectively extending through four projections at four corners and a clip defining a rectangular frame with pressing bars resting on a base. Isenberg teaches four pins (105) extending through four corner projections, extended through a retention module (108), in positioning holes (115). Therefore, to modify Eyman et al., by employing pins, would have been obvious to one having ordinary skill in the art, since Isenburg teaches heat sink mounting assemblies having these design characteristics. The skilled artisan would be motivated to utilize the pins (105) of Isenburg over the screws (90) of Eyman et al., in order to provide an alternate means of securing or locking the module (30) to the printed circuit board (204), by providing an enhanced and stronger means of securing a heat sink assembly/retention board assembly, to prevent the securing means from sliding out (or loosening) a circuit board, and to



eliminate the need of fasteners, such as screws (col. 6, lines 54-64 of Isenburg) and Isenburg is only used to provide the added limitation of four pins, four projections and 4 positioning holes.

Lai teaches a clip (10) defining a rectangular frame, with at least two spaced pressing bars extending through (fins) and resting on a base. Therefore, to modify Eyman et al., by employing a clip with a rectangular frame, would have been obvious to one having ordinary skill in the art at the time the invention was made, since Lai teaches a clip having these design characteristics. The skilled artisan would be motivated to combine the clip configuration of Lai with Eyman et al., in order to provide a stronger retaining means, whereby several clamping portions (18) are used to secure the heat sink assembly (20) of Eyman et al. and Lai is only used to provide the added limitation of a clip defining a rectangular frame.

4. Applicant's arguments, filed 10/3/06, have been fully considered, but are moot in view of the new grounds of rejection.

#### *Conclusion*

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Remsburg et al. US 5804875 shows the general state of the art regarding a heat sink with a clip configuration.


6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory

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period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ingrid Wright whose telephone number is (571)272-8392. The examiner can normally be reached on M-F. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571)272-2800, ext 34. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IDW

  
**LISA LEA-EDMONDS**  
**PRIMARY EXAMINER**